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10/605,796	10/28/2003	Lawrence Yiumchee Chiu	ARC920030076US1	2795

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LACASSE & ASSOCIATES, LLC  
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EXAMINER

MOORE, PATRICK M

ART UNIT PAPER NUMBER

2188

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/605,796	<b>Applicant(s)</b> CHIU ET AL.	
	<b>Examiner</b> Patrick M. Moore	<b>Art Unit</b> 2188	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-18 have been examined.

#### ***Drawings***

2. The drawings are objected to because the OID (#210) and COUNTER (#212) appear reversed. Examiner assumes Applicant's intent is to provide OID's in Column #210 as formatted in OID Column (#204) of the High-Level Table (#200) and to provide a count (e.g. 1, 2, 3, etc.) in Column #212. As shown, it appears these fields have been unintentionally exchanged.
3. The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: #300 – a “first tier LUN/LBA processing block” is referred to in ¶0031 and ¶0036, but does not appear in Figure 3. #400 – a “second tier logic block” is referred to in ¶0036 and ¶0037, but does not appear in Figure 4. #500 – a “third tier OID processing” is referred to in ¶0037, but does not appear in Figure 5.
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

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consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

5. The disclosure is objected to because of the following informalities: The disclosures as pertaining to the first tier processing (Figure 3) in ¶0033 describe a "write-many" functional flow from block #314 to block #310 to block #320 to block #322. However, as further detailed in Figure 3 and Claims, Examiner assumes that Applicant intended functional flow to be from block #314 to block #318 to block #320 to block #322.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2-5, 13, 14, 17 & 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 2 recites the limitation "said low-level OID table" in Lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

b. Claim 3 recites the limitation "said second OID processing" in Lines 4-5.

There is insufficient antecedent basis for this limitation in the claim.

c. Claim 4 recites the limitation "said high-level table" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

d. Claim 5 recites the limitation "said low-level table" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

e. Claim 13(d) recites the limitation "said determining step" in Line 3. This limitation is indefinite because Applicant discloses more than one "determining step" (Claim 13(c), Line 5 and Claim 13(d), Line 1). Claim 13(d) further recites the limitation "said access property" in Lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

f. Claim 14(g) recites the limitation "receiving step" in Line 4. This limitation is indefinite because Applicant discloses more than one "receiving step" (Claim 14(a), Line 1 and Claim 14(b), Line 1) and it is unclear whether this limitation refers to either or is meant to be new recitation of received data. Claim 14(g) further recites the limitation "said determining step" in Line 4. This limitation is indefinite because Applicant discloses more than one "determining step" (Claim 14(d), Line 1 and Claim 14(e), Line 1). Claim 14(g) further recites the limitation "said access property" in Line 5. There is insufficient antecedent basis for this limitation in the claim.

g. Claim 14(i) recites the limitation "receiving step" in Line 3. This limitation is indefinite because Applicant discloses more than one "receiving step" (Claim

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14(a), Line 1 and Claim 14(b), Line 1) and it is unclear whether this limitation refers to either or is meant to be new recitation of received data. Claim 14(i) further recites the limitation "said determining step" in Line 4. This limitation is indefinite because Applicant discloses more than one "determining step" (Claim 14(d), Line 1 and Claim 14(e), Line 1). Claim 14(i) further recites the limitation "said access property" in Line 5. There is insufficient antecedent basis for this limitation in the claim.

h. Claim 14(j) recites the limitation "said OID" in Line 1. There is insufficient antecedent basis for this limitation in the claim.

i. Claim 17 recites the limitation "said high-level table" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

j. Claim 18 recites the limitation "said low-level table" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 13-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

a. Claim 13 recites "A first LUN/LBA processing tier performing actions", but is not limited to tangible, patent-eligible subject matter.

- b. Claim 14 recites "A second Object ID (OID) processing tier performing actions", but is not limited to tangible, patent-eligible subject matter.
- c. Claim 15 recites "An third storage subsystem LUN/LBA processing tier performing actions", but is not limited to tangible, patent-eligible subject matter.
- d. Claim 16 recites "A system for CAS having an LUN/LBA interface", but is not limited to any practical application or tangible, patent-eligible subject matter.
- e. Claims 17 & 18 fail to resolve the deficiencies of Claim 16, as the processing system for CAS is further defined, but fail to disclose any tangible embodiment.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4, 6-13, 16 & 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Odom et al. (US Patent # 6,516,320), herein referred to as Odom.

- a. As per Claim 1, Odom discloses a method for facilitating writing and retrieval in a content addressed storage (CAS) system utilizing a Logical Unit Number/Logical Block Address (LUN/LBA) interface comprising steps of: a. receiving an input/output (I/O) operation request, associated application-level

LUN/LBA combination [Figure 2, #200 & Column 4, Lines 24-27], and optionally, content data [Column 5, Line 64 – Column 6, Line 1 & Figure 10, #1000] from an application program at a first LUN/LBA processing tier [Figure 1, # 102 & Figure 2, # 200] or at a second OID processing tier [Figure 1, # 104 & Figure 2, # 204], b. hashing said content data to generate an OID at said second OID processing tier if content data is received in said receiving step [Figure 1, # 104, Figure 2, #204, Figure 10, #1002 & Column 3, Lines 33-44], c. consulting a high-level OID table [Figure 2, #202, Figure 10, #1004 & Column 4, Lines 27-28] and an access property [Figure 10, # 1006, 1014, 1020 & Column 2, Lines 12-14] with said received application-level LUN/LBA combination [Figure 10, # 1000] or said generated OID [Figure 2, #200 & Column 4, Lines 27-28] to determine whether said content data can be retrieved from or written to an LUN/LBA combination, respectively [Column 4, Lines 31-36], and based on said consulting step, performing at a third storage subsystem LUN/LBA processing tier actions [Figure 2, # 206 & 208] comprising: a write, over-write, or addition operation to an LUN/LBA combination [“store” and “delete” in Column 4, Lines 31-36], a retrieval from an LUN/LBA combination [“retrieve” in Column 4, Lines 31-36], and a denial of operation [Figure 10, # 1008, 1016 & Column 6, Lines 13-15 & 30-32]. Furthermore, Odom teaches that the Fixed Hash [Figure 1, # 102] performs initial hashing of a data object, returning the object's identifier, and the Dynamic Hash provides specific location information [Figure 1, #104] as disclosed in Column 1, Lines 48-54. Additionally, Odom explicitly describes the behavior of a discrete



object [defined in Column 3, Lines 20-21] for the purposes of further illustrating the disclosed hashing structure, but intends that compound objects [defined in Column 3, Lines 21-22] are equally applicable as disclosed in Column 7, Lines 44-58.

b. As per Claim 2, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said high-level OID table [Figure 10, # 1010] and said low-level OID table [Figure 10, # 1018] are updated if said content data is written to an LUN/LBA combination [Column 6, Lines 15-20 & 32-37, respectively].

c. As per Claim 3, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said consulting step [Figure 10, # 1004] occurs at said first LUN/LBA processing tier, if said receiving step occurs at said first LUN/LBA processing tier [Figure 1, # 102, Figure 2, # 202], and at said second OID processing, if said receiving step occurs at said second OID processing tier [Figure 1, # 104, Figure 2, # 204].

d. As per Claim 4, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said high-level table is comprised of at least: an LUN/LBA combination [Figure 3, # 302 & Column 4, Lines 45-51], and an associated OID or plurality of OIDs [Figure 3, # 304 & Column 4, Lines 45-51].

e. As per Claim 6, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said access property is one of a: write-once

[Column 4, Lines 27-28], write-many, or write-many with versioning property  
[Column 6, Lines 13-29].

f. As per Claim 7, Odom further discloses a method for facilitating writing and retrieval, as per claim 6, wherein said write-once property allows a write operation, if an LUN/LBA combination contained in a high-level table has an associated OID with a null value, and a denial of operation otherwise [Figure 2, #202, Figure 10, #1004 & Column 4, Lines 27-28].

g. As per Claim 8, Odom further discloses a method for facilitating writing and retrieval, as per claim 6, wherein said write-many property allows operations comprising: a write operation, if an LUN/LBA combination contained in a high-level table has an associated OID with a null value [Figure 2, #202, Figure 10, #1004 & Column 4, Lines 27-28], and a re-write operation, if an LUN/LBA combination contained in a high-level table has an associated OID with a non-null value [Figure 2, #204, Figure 10, #1010 & Column 6, Lines 21-29].

h. As per Claim 9, Odom further discloses a method for facilitating writing and retrieval, as per claim 6, wherein said write-many with versioning property allows operations comprising: a write operation, if an LUN/LBA combination contained in a high-level table has an associated OID with a null value [Figure 2, #202, Figure 10, #1004 & Column 4, Lines 27-28], and an addition operation, if an LUN/LBA combination contained in a high-level table has an associated OID or plurality of

OIDs with non-null values [Figure 2, #204, Figure 10, #1010 & Column 6, Lines 21-29].

i. As per Claim 10, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said write operation comprises steps of writing an OID generated from a hash of said content data [Column 4, Lines 31-36] to either one of, or both, a high-level OID table and a low-level OID table and writing said content data to an LUN/LBA combination [Column 4, Lines 45-51 & 58-64].

As is consistent with commonly used terminology in the art, Odom refers to a write operation as a "store operation".

j. As per Claim 11, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said over-write operation comprises steps of updating an existing OID with an OID generated from a hash of said content data associated with an LUN/LBA combination [Column 4, Lines 31-36] in either one of or both a high-level OID table and a low-level OID table and writing said content data to an LUN/LBA combination [Column 4, Lines 45-51 & 58-64].

k. As per Claim 12, Odom further discloses a method for facilitating writing and retrieval, as per claim 1, wherein said addition operation comprises steps of adding to an OID list in either one of or both a high-level OID table and a low-level OID table [Column 4, Lines 45-51 & 58-64], an OID generated from a hash of said content data associated with an LUN/LBA combination and writing to an LUN/LBA combination said content data [Column 4, Lines 31-36].

I. As per Claim 13, Odom further discloses a first LUN/LBA processing tier performing actions comprising: a. receiving an input/output (I/O) operation request, associated application-level LUN/LBA combination [Figure 2, #200 & Column 4, Lines 24-27], and optionally, content data [Column 5, Line 64 – Column 6, Line 1 & Figure 10, #1000] from an application program [Column 2, Lines 12-14], b. passing said content data to a second OID processing tier if content data is received from said application program [Figure 2, #204], c. using said application-level LUN/LBA combination received from said application program or using an OID returned from second OID processing tier if said content data was passed to said second OID processing tier in previous step to determine whether corresponding or same OID exists in a high-level OID table [Figure 2, #202, Figure 10, #1004 & Column 4, Lines 27-28], d. determining whether a write, over-write, or an addition operation [“store” and “delete” in Column 4, Lines 31-36] is allowed or if an operation is denied, based on said determining step and said access property [Figure 10, # 1008, 1016 & Column 6, Lines 13-15 & 30-32], e. passing said operation information and either: an OID if a retrieval operation is requested or an LUN/LBA address combination element location [“retrieve” in Column 4, Lines 31-36] and associated content data for any other operation [e.g. “store” and “delete” in Column 4, Lines 31-36], and f. updating said high-level OID table with a new OID for an associated application-level LUN/LBA if a write, over-write, or an addition operation is allowed [Figure 10, # 1010 & Column 4, Lines 45-51].

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m. As per Claim 16, Odom further discloses a system for CAS having an LUN/LBA interface comprising: a. a first LUN/LBA processing tier [Figure 1, # 102 & Figure 2, # 200], b. a second OID processing tier [Figure 1, # 104 & Figure 2, # 204], c. a storage subsystem LUN/LBA processing [Figure 1, # 106 & Figure 2, # 208], d. a first table providing a correspondence between a high-level LUN/LBA combination and an OID or plurality of OIDs [Figure 2, # 202], and e. a second table providing a correspondence between a low-level LUN/LBA combination and an OID or plurality of OID [Figure 2, # 206].

n. As per Claim 17, Odom further discloses a system for CAS having an LUN/LBA interface, as per claim 16, wherein said high-level table is comprised of at least: an LUN/LBA combination [Figure 3, # 302 & Column 4, Lines 45-51], and an associated OID or plurality of OIDs [Figure 3, # 304, Column 4, Lines 45-51 & Column 1, Lines 48-54].

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odom et al. as applied to claims 1-4, 6-13, 16 & 17 above, and further in view of Harrington et al. (US PGPub # 2001/0042058), herein referred to as Harrington.

a. As per Claim 5, Odom discloses a method for facilitating writing and retrieval, as per claim 1, wherein said low-level table is comprised of at least: an LUN/LBA combination [Figure 5, 502 & Column 4, Lines 58-64], an associated OID or plurality of OIDs [Column 12, Lines 35-39]. Odom teaches a doubly linked list data structure as is well known to those of ordinary skill in the art. Such a structure would require associating a low-level record with one or more OIDs as is consistent with the data structures disclosed previously.

b. As per Claim 14, Odom further discloses a second Object ID (OID) processing tier performing actions comprising: a. receiving an application-level LUN/LBA address combination and optionally, content data from either an application program or a first LUN/LBA processing tier [Figure 2, #200 & Column 4, Lines 24-27], b. receiving an OID from a first LUN/LBA processing tier if content data is not received [Figure 2, #202 & Column 4, Lines 27-31], c. hashing said content data to generate an OID if content data is received [Figure 1, # 104, Figure 2, #204, Figure 10, #1002 & Column 3, Lines 33-44], d. determining a physical LUN/LBA by using received OID to consult low-level OID table [Figure 10, #1012 & Figure 2, # 206 & 208], e. determining whether an OID exists in a high-level OID table by comparing generated OID to OIDs stored in said high-level OID table [Figure 10, #1004, Figure 2, # 202 & 204 & Column 4, Lines 27-28], f. updating high-level OID table with generated OID if generated OID does not exist in a high-level OID table [Column 6, Lines 15-20], g. passing a write request, received content data, and a location of OID in low-level OID table to a

third storage subsystem LUN/LBA processing tier if content data is received in receiving step, based on said determining step and operations allowed by said access property [Column 6, Lines 30-37], h. updating a low-level OID table with said generated OID [Column 12, Lines 35-39], if a write request and associated data is passed to said third storage subsystem LUN/LBA processing tier [Figure 10, # 1018 & Column 6, Lines 32-37], i. passing a retrieval request and a physical LUN/LBA combination to said third storage subsystem LUN/LBA processing tier if an OID was received in receiving step, based on said determining step and operations allowed by said access property [Column 6, Lines 49-64], j. passing to a first LUN/LBA processing tier said OID if a write request and associated data is passed to said third storage subsystem LUN/LBA processing tier [Column 6, Lines 15-20], and k. receiving content data from said third storage subsystem LUN/LBA processing tier, if a retrieval request and said physical LUN/LBA is passed to said third storage subsystem LUN/LBA processing tier [Column 6, Lines 65-67].

c. As per Claim 18, Odom further discloses a system for CAS having an LUN/LBA interface, as per claim 16, wherein said low-level table is comprised of at least: an LUN/LBA combination [Figure 5, 502 & Column 4, Lines 58-64], an associated OID or plurality of OIDs [Column 12, Lines 35-39].

d. Odom does not expressly disclose an object reference counter, but Harrington discloses a counter associated with each OID [Figure 11, #500, ¶0061 & ¶0064]. Odom and Harrington are analogous art because they are from the

same field of endeavor: content hashing applied to optimize memory system management. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the counter disclosed by Harrington with the Odom's data list structure. The motivation for doing so would have been to free unused memory by removing objects that are no longer referenced as is taught by Harrington in ¶0067 & ¶0068. Therefore, it would have been obvious to combine Harrington with Odom for the benefit of increased memory usage to obtain the invention as specified in Claims 5, 14 and 18.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Odom et al. as applied to claims 1-4, 6-13, 16 & 17 above, and further in view of Harrison (UK Patent Application # 2,374,718), herein referred to as Harrison.

a. As per Claim 15, Odom further discloses an third storage subsystem LUN/LBA processing tier performing actions comprising: a. receiving from a second OID processing tier a write request or a retrieval request and associated data [Column 6, Lines 30-37], b. using an OID received from said second OID processing tier to determine associated LUN/LBA combination [Figure 10, #1012 & Figure 2, # 206], c. writing to an LUN/LBA combination if a write request and associated content data is received [Figure 2, # 208 & Column 6, Lines 30-37], d. retrieving from an LUN/LBA if a retrieval request and an associated OID is received [Figure 2, # 208 & Column 6, Lines 49-64], and g. passing to an second OID processing tier content data if a retrieval request and an associated OID was



received [Column 6, Lines 65-67]. However, Odom does not expressly disclose hashing the stored data and comparing the result with an associated OID value.

b. Harrison discloses re-hashing content data retrieved from an LUN/LBA combination if a retrieval request and an associated OID is received [Figure 5, # 61, 68 & Page 12, Lines 11-15] and comparing results of re-hashing step with an OID associated with said LUN/LBA combination stored in a low-level OID table [Figure 5, # 69, 70, 72, 74, Page 2, Lines 22-24 & Page 12, Lines 11-15]. Odom and Harrison are analogous art because they are from the same field of endeavor: access control of storage media. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the tiered hash taught by Odom with the data verification and validation taught by Harrison. The motivation for doing so would have been to avoid retrieving invalid or corrupted data and returning bad data to an application. Therefore, it would have been obvious to combine Odom and Harrison for the benefit of data integrity to obtain the invention as specified in Claim 15.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick M. Moore whose telephone number is (571) 272-1239. The examiner can normally be reached on M-F 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabahn can be reached on (571) 272-4210. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMM

Handwritten signature of Mano Padmanabhan in black ink, with the date 12/8/05 written below it.

MANO PADMANABHAN  
SUPERVISORY PATENT EXAMINER

MANO PADMANABHAN  
SUPERVISORY PATENT EXAMINER